



NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA
SURATHKAL, MANGALORE - 575 025

Course Code – CS111

Course Name – Computer Programming Lab

Lab - 05

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Submitted To

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Functions

Question - 4

To add numbers using function

Answer

```
#include<stdio.h>
int add_numbers(int *nums, int len);
int main()
{
    int n, res, i;
    printf("How many number you want to add: ");
    scanf("%d", &n);
    int numbers[n];
    printf("Enter numbers: ");
    for(i=0; i<n; i++)
    {
        scanf("%d", (numbers+i)); //taking input
    }
    res = add_numbers(numbers, n);
    printf("\nTotal is = %d\n", res);
    return 0;
}

int add_numbers(int *nums, int len) //function
{
    int i, sum = 0;
    for(i=0; i<len; i++)
    {
        sum += *(nums+i);
    }
    return sum;
}
```

Output

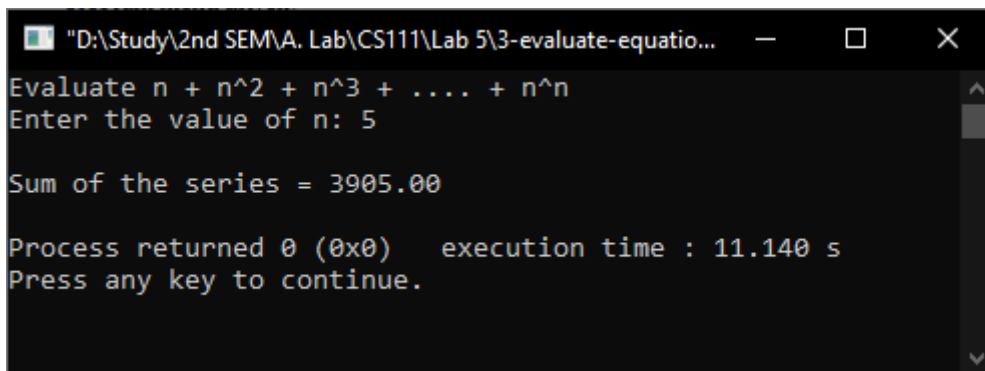
Question – 3

Program to evaluate the equation $y = x^1 + x^2 + x^3 + \dots + x^n$

Answer

```
#include <stdio.h>
#include <math.h>
double sum_of_series(int n);
int main()
{
    int n;
    double res;
    printf("Evaluate n + n^2 + n^3 + .... + n^n\n");
    printf("Enter the value of n: ");
    scanf("%d", &n);
    res = sum_of_series(n);
    printf("\nSum of the series = %.2lf\n", res);
    return 0;
}
double sum_of_series(int n)    //function
{
    double sum, p;
    p = pow(n,n);
    sum = (n * (p - 1)) / (float) (n-1);
    return sum;
}
```

Output



```
"D:\Study\2nd SEM\A. Lab\CS111\Lab 5\3-evaluate-equatio...  
Evaluate n + n^2 + n^3 + .... + n^n  
Enter the value of n: 5  
  
Sum of the series = 3905.00  
  
Process returned 0 (0x0) execution time : 11.140 s  
Press any key to continue.
```

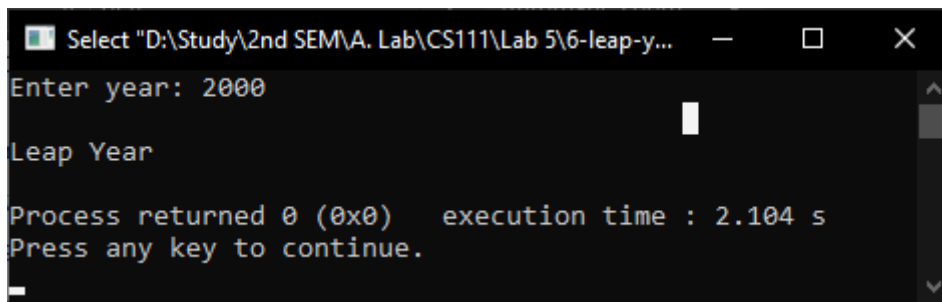
Question – 6

Program to find whether an entered year is leap year or not

Answer

```
#include <stdio.h>  
void check_year(int year);  
int main()  
{  
    int year;  
    printf("Enter year: ");  
    scanf("%d", &year);  
    check_year(year);  
    return 0;  
}  
void check_year(int year) // function  
{  
    if ((year % 400 == 0) || (year % 4 == 0 && year % 100 != 0))  
    {  
        printf("\nLeap Year\n");  
    }  
    else  
    {  
        printf("\nNot Leap year\n");  
    }  
}
```

Output



```
Select "D:\Study\2nd SEM\A. Lab\CS111\Lab 5\6-leap-y...  
Enter year: 2000  
Leap Year  
Process returned 0 (0x0) execution time : 2.104 s  
Press any key to continue.
```

Recursion

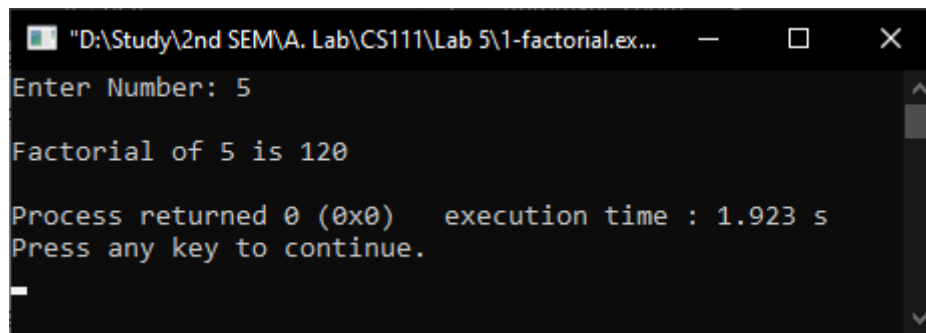
Question – 1

To find the factorial of a number

Answer

```
#include<stdio.h>  
int fact(int n);  
int main()  
{  
    int n, res;  
    printf("Enter Number: ");  
    scanf("%d", &n);  
    res = fact(n);  
    printf("\nFactorial of %d is %d\n",n,res);  
    return 0;  
}  
int fact(int n)    // recursion function  
{  
    if(n==1)  
        return 1;  
    else  
        return n * fact(n-1);  
}
```

Output



```
"D:\Study\2nd SEM\A. Lab\CS111\Lab 5\1-factorial.ex... - □ ×
Enter Number: 5

Factorial of 5 is 120

Process returned 0 (0x0)   execution time : 1.923 s
Press any key to continue.
_
```

Question – 2

To generate Fibonacci Series upto a given number

Answer

```
#include <stdio.h>
int fibonacci(int n, int n1, int n2);
int main()
{
    int n, n1=0, n2=1;
    printf("Enter the number: ");
    scanf("%d", &n);
    printf("Fibonacci series upto %d: ", n);
    printf("%d %d ", n1, n2);
    fibonacci(n, n1, n2);
    printf("\n");
    return 0;
}

int fibonacci(int n, int n1, int n2) // function
{
    int temp = n1 + n2;
    if(temp>=n)
    {
        return 0;
    }
}
```

```

else
{
    printf("%d ",temp);
    n1 = n2;
    n2 = temp;
    fibonacci(n, n1, n2);
}
}

```

Output

```

D:\Study\2nd SEM\A. Lab\CS111\Lab 5\2-fibo-with-recursion.exe
Enter the number: 100
Fibonacci series upto 100: 0 1 1 2 3 5 8 13 21 34 55 89

Process returned 0 (0x0)   execution time : 1.901 s
Press any key to continue.

```

Question – 4

To find the sum of series $1 + 1/3! + 1/5! + \dots + 1/N!$

Answer

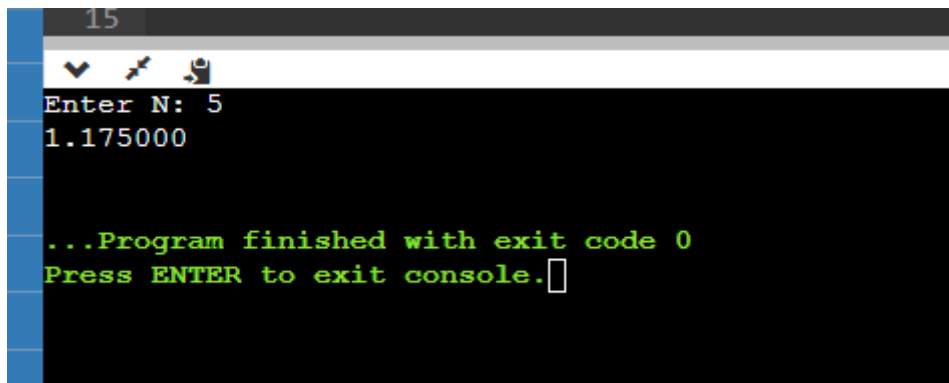
```

#include <stdio.h>
double sum(int n, int n1, double s);
int main()
{
    int n;
    double res;
    printf("Enter N: ");
    scanf("%d", &n);
    res = sum(n, 1, 0);
    printf("%lf\n", res);
    return 0;
}

```

```
double sum(int n, int n1, double s)
{
    int fact = 1, i;
    for (i = 1; i <= n1; i++)
    {
        fact *= i;
    }
    if (n1 > n)
    {
        return s;
    }
    else
    {
        s = s + (1.0 / fact);
        sum(n, n1 + 2, s);
    }
}
```

Output

A screenshot of a Windows command prompt window. The title bar shows the number '15'. The window contains the following text: 'Enter N: 5' followed by '1.175000' on the next line. Below that, in green text, it says '...Program finished with exit code 0' and 'Press ENTER to exit console.' followed by a cursor icon. The window has a standard Windows interface with a taskbar on the left and a title bar at the top.

```
15
Enter N: 5
1.175000

...Program finished with exit code 0
Press ENTER to exit console.
```